

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Amendment of Parts 1, 21, 73, 74 and 101 of the)	WT Docket No. 03-66
Commission's Rules to Facilitate the Provision of Fixed)	RM-10586
and Mobile Broadband Access, Educational and Other)	
Advanced Services in the 2150-2162 and 2500-2690)	
MHz Bands)	
)	
Part 1 of the Commission's Rules - Further Competitive)	WT Docket No. 03-67
Bidding Procedures)	
)	
Amendment of Parts 21 and 74 to Enable Multipoint)	MM Docket No. 97-217
Distribution Service and the Instructional Television)	
Fixed Service Amendment of Parts 21 and 74 to Engage)	
in Fixed Two-Way Transmissions)	
)	
Amendment of Parts 21 and 74 of the Commission's Rules)	WT Docket No. 02-68
With Regard to Licensing in the Multipoint Distribution)	RM-9718
Service and in the Instructional Television Fixed Service)	
for the Gulf of Mexico)	
)	

Reply Comments of IPWireless, Inc.

IPWireless, Inc. ("IPWireless") hereby submits its reply comments in the above-captioned proceeding. IPWireless, uniquely positioned as an equipment supplier as well as a licensee and lessee of spectrum in the 2500-2690 MHz band, seeks to expedite deployment of advanced wireless broadband services, and shares in the Commission's assessment that the MMDS/ITFS band is well-suited for this purpose. IPWireless has been an active participant, via the Wireless Communications Association International ("WCA") Engineering Committee, in the formulation of the "White Paper" jointly submitted by the "Coalition" parties: WCA, the Catholic Television Network ("CTN") and the National ITFS Association ("NIA"). The Coalition's technical proposal is the product of several months of negotiation and compromise.

The combined knowledge and experience of industry experts on the current state of the art in radio engineering is reflected in the White Paper's technical proposal.

IPWireless has reviewed the initial comments submitted in response to the Commission's NPRM, and has concluded that the core technical proposals in the White Paper are sound and workable, and have withstood the efforts of outsiders to identify fundamental flaws. On other issues, the initial comments reflect a lack of consensus, even among MMDS and ITFS incumbents. Although the Coalition proposal includes a seven-channel mid-band segment ("MBS") reserved for high power operation ("HPO"), several parties suggested alternatives. Some of these alternative proposals echoed IPWireless' recommendation that the size of the HPO segment be variable, to accommodate variations in HPO use in different markets, and that the HPO segment be placed at the upper (or lower) end of the band, with the remainder available for flexible use.

DISCUSSION

A. INTERFERENCE MITIGATION AND FLEXIBLE USE

Several commenters question the practicality of the Coalition White Paper's proposal to allow for mixed TDD and FDD utilization in the portions of the restructured MMDS/ITFS band.¹ None of these commenters is a licensee or operator in the MMDS/ITFS band. On the other hand, current licensees' and operators' comments were overwhelmingly supportive of this aspect of the

¹ See Comments of National Telecommunications & Internet Association, at 4; Comments of Telecommunications Industry Association (TIA), at 3; Comments of Nokia, at 2-3; Comments of Motorola, at 13; Comments of NextNet Wireless, at 4-5; Comments of ArrayComm, Inc., at 1-3, 6-7.

Coalition plan and there were no major issues raised by incumbents with regard to the flexible use aspects of the proposed band plan.²

The Coalition technical proposal, including the equipment certification emission masks and the deployment-based emission limits, presents a practical solution to coexistence of TDD with non-synchronized TDD and also to coexistence of TDD with FDD. The White Paper solution provides a flexible approach. Adjacent operators of non-compatible systems would be required to implement a shared pseudo-guard band between their systems, as well as to adopt increased attenuation measures to protect the noise floors of both systems. When adjacent operators deploy compatible TDD or FDD technology, no additional protection is required beyond the basic equipment certification mask. No operator is required by rule to adopt a particular technology. However, if adjacent system operators deploy compatible technologies, both can avoid the costs associated with setting aside spectrum for guard bands and the installation of base station filters or other equipment or measures needed to provide additional attenuation between the adjacent systems.

Calls for specific TDD and FDD allocations with guard bands separating them ignore several important realities that must be considered in the MMDS/ITFS band:

- Specific TDD and FDD allocations impose a large degree of inflexibility in responding to the mix of traffic patterns for the applications supported with the broadband wireless systems deployed in the MMDS/ITFS band.³

² Comments of Maui Sky Fiber at 1; Comments of The ITFS/2.5 GHz Mobile Wireless Engineering & Development Alliance, Inc. ("IMWED") at 17; Comments of Hispanic Information and Telecommunications Network at 8-9. *See also* Comments of Hardin Associates at 2-4, Comments of Intel Corporation at 6. Co-existence between TDD and FDD (WCDMA) networks was demonstrated this past summer during tests IPWireless conducted at Nortel Networks' wireless headquarters in Châteaufort, France. *See* IPWireless Press Release, dated June 25, 2003, attached as Exhibit A.

³ Any band plan dedicating spectrum to TDD and FDD is necessarily based on assumptions regarding the types of traffic applications to be supported many years in the future. It is presumptuous to expect that allocation decisions made today, when these new wireless services and applications are in their

- A TDD-specific allocation does not protect non-synchronized TDD systems from different vendors from interfering with each other, thus a TDD and FDD segmented band plan only improves the interference situation for FDD technologies at the expense of licensee flexibility and additional guard bands between TDD and FDD.⁴ None of the commenters suggested solutions to mitigate the TDD to TDD interference that may result when non-compatible systems are deployed in the same coverage area, in adjacent spectrum.
- Currently, only TDD solutions are deployed in the MMDS/ITFS band for providing broadband wireless service, it is not known if or when FDD solutions will be available.⁵
- A band plan designating separate segments for TDD and FDD operation eliminates the possibility that every reconfigured channel block can support a deployable system without the need for the operator to acquire additional channels.⁶ This will be unacceptable to many licensees, including IPWireless, Inc.
- Having separate TDD and FDD bands complicates and may delay deployments because of the potential mismatch between a licensee's desired technology and deployment strategy and the possibilities afforded by the spectrum allocation they control.

In the MMDS/ITFS band, predetermined TDD and FDD boundaries impose unacceptable limitations on the licensees' flexibility to deploy broadband wireless service. There is little, if any, benefit offsetting this loss of flexibility.⁷ For this reason, the Coalition adopted

nascent stages, will be equally viable once these systems become loaded with as-yet undetermined traffic types. Some applications will drive heavy downlink traffic (such as music file downloads). Some applications will drive heavy uplink traffic (portable devices with still and motion cameras), and some applications will drive symmetric traffic patterns (voice, chat, two-way real-time video). Large blocks of flexible use spectrum as proposed by the Coalition's White Paper will facilitate adjustment of the radio system capacity in response to any mix of uplink and downlink traffic required by changing user application requirements.

⁴ Guard bands between FDD and TDD would be required, presuming that the rules specified only the basic emission mask, as per the Coalition band plan (modeled on Section 24.238 of the Commission's rules). Clearly this emission limit can be improved upon with additional base station filtering on an as-required basis, and the Coalition White Paper considered this to be an acceptable tradeoff for the additional flexibility afforded by the proposed band plan.

⁵ See Comments of Sprint Corporation ("Sprint") at 5-6 (supporting flexibility, noting that all trials underway are TDD, but that it continues to evaluate FDD options).

⁶ Existing channel blocks that map to an FDD uplink or downlink allocation could not support a deployment unless the licensees of those blocks obtained the right to use the designated paired spectrum.

⁷ Several parties, including TIA at 2-3, and Ericsson at 4, recommend that the FCC adopt a 2.5 GHz band plan facilitating global harmonization and roaming. Even though the 2.5 GHz band has been identified internationally as suitable for 3G expansion beginning in 2008 and beyond, the band plans

deployment-based emission limits as an acceptable compromise measure to preserve flexibility, in the event that incompatible technologies are deployed in adjacent spectrum.

B. SIZE AND PLACEMENT OF HPO SEGMENT

In its initial comments, IPWireless asserted that the band plan described in paragraph 53 of the NPRM, which places the High Power Operations (“HPO”) segment at the top of the band, provided “a compelling alternative” to the mid-band placement of the HPO in the Coalition proposal. IPWireless went a step further and suggested that the number of channels set aside for HPO in a particular geographic market be determined through negotiations, and that the ITFS licensees be given the flexibility to “opt out” of HPO in whole or in part, making some or all of their channel capacity available for low-power use on a flexible basis.

The desirability of the placement of the HPO segment in the middle of the band was also questioned by a number of other parties, including IMWED (at 17), the School Board of Broward County (“SBBC”)(at 10-11), and the Independent MMDS Licensee Coalition (“IMLC”)(at 6). Several parties criticized the Coalition’s “one size fits all” allocation of seven channels for HPO.⁸ Even those educational institutions making heavy use of their licensed ITFS channel capacity, such as Stanford and Northeastern, acknowledge that technological advances, including digital compression, have greatly enhanced the usefulness of ITFS. Parties advocating preservation of the status quo – continuation of analog transmission, and the nationwide allocation of many channels for high power operation – have failed to show that the public

are still in the proposal stage, and the Commission has no way of knowing which, if any, of the current proposals will ultimately be adopted. A far better course, as IPWireless recommended in its initial comments, would be for the FCC to adopt a flexible use TDD/FDD designation for the entire non-HPO portion of the 2.5 GHz band, and thereby permit those carriers desiring to offer international roaming the flexibility to conform their own U.S. band plans with future allocations in other nations.

⁸ IMLC at 6, Sprint at 19, SBBC at 11-12, Grand MMDS Alliance New York F/P Partnership (“Grand Alliance”) at 6-7, IMLC at 6, Illinois Institute of Technology (“IIT”) at 18-20.

interest requires the continuation of the inefficient use of spectrum, given that at least some of the instructional programming needs can be met through a combination of digital compression (up to 10:1) and alternative delivery technologies.

C. LICENSEE PERFORMANCE REQUIREMENTS

In its initial comments, IPWireless recommended that the FCC adopt and enforce stringent construction and operation requirements to prevent warehousing of MMDS and ITFS spectrum by commercial operators.⁹ IPWireless proposed that MMDS licensees, as well as commercial operators leasing MMDS spectrum, be required to commence commercial service to at least one community within 36 months, to construct and commence operation of a system capable of serving 1/3 of the population of the geographic service area within 48 months, and to expand that system to reach at least 2/3 of the population within 60 months. Failure to satisfy these performance requirements would mean that the Commission could institute proceedings to partition the unserved areas, making the spectrum available for use by parties willing to provide service to those areas. Among the parties commenting on this issue, the National Telecommunications Cooperative Association (“NTCA”) supports construction benchmarks, particularly for “large carriers” obtaining licenses for “large geographic areas.”¹⁰ IPWireless agrees with NTCA. This need not disadvantage small or rural carriers, including the NTCA’s members, who should be able to obtain smaller license areas, either directly or through partitioning. The adoption and enforcement of uniform construction and service obligations for

⁹ The proposed requirements are generally based upon those already existing in other services, including broadband Personal Communications Service (47 CFR §24.203 “Construction requirements”) and the Cellular Radiotelephone Service (47 CFR §22.947 “Five year build-out period”).

¹⁰ NTCA Comments at 7.

all commercial operators would not, under these circumstance, unfairly disadvantage small carriers or those intending to serve rural areas.

In discussions with interested parties following submission of the initial comments, questions have arisen regarding IPWireless' proposed licensee performance requirements. IPWireless takes this opportunity to provide clarification of its views on two issues. ITFS licensees leasing their spectrum to commercial operators may find themselves unable to satisfy construction and operation deadlines due to circumstances beyond their control. For example, the excess capacity lessee may file for bankruptcy protection, default on the lease payments for a shared transmitter site, or have the common transmitting equipment repossessed for failure to make timely payments. IPWireless would not object to a rule tolling the ITFS licensee's construction and performance obligations under such circumstances, particularly if the delay in construction or cessation of operations due to the lessee's default occurs during the term of an existing lease.¹¹

IPWireless has also received questions on whether "commercial service" includes the use of spectrum for backhaul, or to provide a guard band between the operator's system and adjacent incompatible systems. Spectrum used to provide any guard bands necessary to conform to the rules, consistent with sound engineering practices, should be counted as having been placed in commercial service. The term "commercial service" should be limited to direct links between a carrier's network and one or more end users/subscribers (either fixed locations or portable/mobile units). Under such a definition, spectrum dedicated to backhaul would generally

¹¹ As IPWireless noted in its initial comments, the Commission should require that future leases of ITFS spectrum expressly obligate the commercial operator to meet the performance requirements, and further provide that any failure to satisfy these requirements would be grounds for termination of the lease.

not qualify as being in “commercial service.” However, the Commission could adopt rules permitting backhaul use of a portion (less than half) of the licensed spectrum for backhaul in rural or remote areas, and could allow for the use of spectrum for backhaul in non-rural, non-remote areas on a waiver basis in appropriate situations.¹²

Respectfully submitted,

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¹² A question might also arise as to whether a single licensee or operator should be permitted to exercise effective control over as much as 190 MHz of spectrum in a geographic service area, to the exclusion of other potential entrants. The potential for abuse can be controlled without establishing arbitrary spectrum caps. For example, the Commission could require operators with a “dominant position” in the 2.5 GHz band (*e.g.* those controlling 25% or more of the spectrum in any geographic area) to report, at three- to five-year intervals, their spectrum utilization. (Periodic reporting requirements would be roughly analogous to those in the cellular rules, *i.e.* 47 CFR §22.947. “Five year build-out period.”) Licensees or operators subject to these reporting obligations would report spectrum use in each of four categories (commercial service, backhaul, reserve and guard band) and would be required to justify any use of spectrum in excess of Commission-established benchmarks for the categories of backhaul, guard bands or “future use reserve.” One possible set of “future use reserve” benchmarks would permit operators to designate as much as half their spectrum as reserved for future use during the first half of the license term, decreasing to a one-third “future use reserve” when a third of the license term remains. If a licensee could not justify continued use and control spectrum exceeding the applicable benchmarks, a process leading to the disaggregation and reauction of the excess spectrum would be initiated.



EXHIBIT A

IPWireless announces the world's first, fully interoperable, 3G network for mobile voice and broadband data.

IPWireless Successfully Completes Interoperability and Co-Existence Tests

June 25, 2003 - IPWireless has successfully completed the world's first interoperability (IOT) and co-existence testing between UMTS TDD (TD-CDMA) and UMTS FDD (WCDMA) networks at Nortel Networks wireless headquarters in Châteaufort, France. The test, completed during a trial of the IPWireless™ TDD solution, demonstrated that both FDD and TDD standards of 3G UMTS can co-exist in the same cell site and interface together as one network solution.

The tests also showed the co-existence of both FDD and TDD Node Bs at the same cell site without any interference or degradation of service using paired and unpaired spectrum allocations. These findings prove conclusively that mobile network operators can safely offer the high-bandwidth low-latency services available on a TDD network on the cell sites with existing or planned FDD deployments.

Chris Gilbert, CEO of IPWireless said, "This is another important step for IPWireless, demonstrating that there is a UMTS solution for operators unpaired TDD spectrum which can leverage and work seamlessly with other UMTS solutions. This solution will allow operators to offer a host of attractive new services that have proven market appeal."

The world's first IOT test integrated IPWireless' TDD Radio Access Network (RAN) via the Iups interface (between RNC and SGSN) with Nortel Networks market leading packet core solution, which is deployed by a number of major European operators.

Alain Biston, president and general manager, UMTS Networks, Nortel Networks said, "This test with IP Wireless demonstrates the high interoperability of our intelligent packet core solution with multiple wireless access technologies."

IPWireless is supplying their 3GPP standards compliant UMTS TDD Mobile Broadband technology equipment including Node Bs, Integrated Network Controllers and end user PC cards (PCMCIA's). Via the PC card, the IPWireless solution gives laptop and PDA users mobile Internet access at speeds up to 1.5Mbps - faster than the fixed line Broadband rates currently available. In a fully deployed network, broadband coverage is as ubiquitous as with today's GSM networks. This offers a multitude of new revenue streams for mobile network operators and the services that business and residential users are demanding.

About IPWireless

IPWireless offers mobile broadband, an extremely disruptive technology that is on track to change the way people around the world communicate, access the Internet,



and use a host of applications at home, at the office, or on the road. IPWireless has quickly established itself as a leader in the market, with commercial deployments around the world and trials with ten of the top twenty global wireless operators. IPWireless has announced strategic partnerships and relationships with some of the largest companies in the industry, including Alcatel and Solectron. Founded in April 1999, IPWireless is led by a world-class management team of seasoned entrepreneurs and technology and marketing executives from leading mobile and communication companies including Cisco, Lucent, Motorola, and Qualcomm. The company, backed by more than \$150 million in funding from leading venture capital firms, is headquartered in San Bruno, California, with R&D and sales facilities based in the U.K. For more information about IPWireless, visit the company's Web site at www.ipwireless.com.

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